**Java Assignment 6**

1.

public class InstanceCounter {

private static int instanceCount = 0;

// Constructor

public InstanceCounter() {

instanceCount++;

}

// Method to get the current instance count

public static int getInstanceCount() {

return instanceCount;

}

}

public class Main {

public static void main(String[] args) {

InstanceCounter obj1 = new InstanceCounter();

InstanceCounter obj2 = new InstanceCounter();

InstanceCounter obj3 = new InstanceCounter();

System.out.println("Total instances created: " + InstanceCounter.getInstanceCount());

}

}

2.

public class Main {

public static void main(String[] args) {

Logger logger = Logger.getInstance();

logger.log("This is a log message.");

logger.log("Another log message.");

System.out.println(logger.getLog());

logger.clearLog();

System.out.println(logger.getLog());

}

}

This code will output:

This is a log message.

Another log message.

<empty string>

3.

public class Employee {

private static int employeeCount = 0;

private static double totalSalaryExpense = 0.0;

private int id;

private String name;

private double salary;

static {

employeeCount = 0;

}

public Employee(String name, double salary) {

this.id = ++employeeCount;

this.name = name;

this.salary = salary;

totalSalaryExpense += salary;

}

// Getter methods

public int getId() {

return id;

}

public String getName() {

return name;

}

public double getSalary() {

return salary;

}

public void setSalary(double newSalary) {

totalSalaryExpense -= this.salary;

this.salary = newSalary;

totalSalaryExpense += newSalary;

}

public static int getTotalEmployees() {

return employeeCount;

}

public static void applyRaise(double percentage) {

for (Employee employee : Employee.getAllEmployees()) {

employee.salary \*= (1 + percentage / 100);

totalSalaryExpense += employee.salary;

}

}

public static double calculateTotalSalaryExpense() {

return totalSalaryExpense;

}

public String toString() {

return "Employee{" +

"id=" + id +

", name='" + name + '\'' +

", salary=" + salary +

'}';

}

private static Employee[] getAllEmployees() {

return new Employee[0]; // Placeholder

}

}

public class Main {

public static void main(String[] args) {

// Create some employees

Employee emp1 = new Employee("John Doe", 50000);

Employee emp2 = new Employee("Jane Smith", 60000);

System.out.println("Total employees: " + Employee.getTotalEmployees());

Employee.applyRaise(5);

System.out.println("Total salary expense: " + Employee.calculateTotalSalaryExpense());

emp1.setSalary(65000);

System.out.println(emp1);

}

}